REMARKS

Entry of the amendments to the claims and abstract before examination of the application is respectfully requested. These claims and abstract have been amended to remove the reference numerals.

If there are any questions regarding this Preliminary Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 101248.55500US).

Respectfully submitted,

December 14, 2004

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ABSTRACT

An antenna portion (7) includes a radial waveguide (7a) made of metal and connected to a lower end of a waveguide pipe (19), and a slot antenna (7b). A top plate (5) is arranged above a chamber (1). A layer (20) of air is formed between the antenna portion (7) and the top plate (5). Half a difference between an inner diameter B of a region, in which the top plate (5) and the antenna portion (7) are present, and an inner diameter A of the radial waveguide (7a) is equal to a product of a wave length λ_g of the microwave, which is based on a composite dielectric constant resulting from a dielectric constant of the top plate (5) and a dielectric constant of an atmosphere (air layer (20)) in the region containing the top plate (5) and the antenna portion (7), and zero or a natural number. An inner diameter C of the chamber (1) is equal to or shorter than the inner diameter A of the radial waveguide (7a). Thereby, the electromagnetic field for forming the plasma production region (17) is controlled to achieve a uniform plasma density.